GLOSSARY

authorization basis

Documentation and administrative controls that establish safe parameters and limits for facility operations. These include safety analysis reports, operational safety requirements, technical safety requirements, criticality safety analysis, the justification for continued operation, and the Basis for Interim Operation.

categorization of vulnerabilities

Sorting of vulnerabilities into facility condition, material/packaging, and institutional vulnerabilities.

chemical toxicity

The condition of being chemically toxic. Uranium is a heavy metal and as such evokes a toxic chemical response in humans.

classification of vulnerabilities

Ranking of vulnerabilities by the likelihood and severity of potential consequences to workers, the public, and the environment. Consequences include the effects of both radiological and chemical hazards. Likelihood classes of high, low, and very low and consequence classes of high, medium, and low are used.

commingled and/or associated materials

Chemicals or other types of hazardous materials in contact or in the same package with HEU that are likely to be involved in or released during the postulated event and contribute to its overall consequences.

collocated materials

Hazardous materials (e.g., toxic chemicals, metal, compounds) located near or in the same facility as HEU that could be released during a postulated event (e.g., fire) and contribute to its overall consequences.

committed effective dose equivalent (CEDE)

Whole body dose of radiation calculated from the sum of the products of committed dose equivalents for various body organs and the weighting factors specific to each of those organs. The "committed dose equivalent" is the dose equivalent that will accrue in a body organ over a period of 50 years after the intake of a radioactive isotope; "dose equivalent," the product of the absorbed radiation dose to an organ, a quality factor for radiation type, and other modifying factors—a concept allowing for the uniform evaluation of different types of radiation; and "absorbed dose," the amount of radiation energy deposited on tissue or a body organ per unit mass.

Emergency Response Planning Guide

Air concentration values established by the American Industrial Hygiene Association for 60-minute exposures of individuals to hazardous chemicals.

environment

The areas outside the facility building but inside the site boundary, the areas outside the site boundary, or both.

ES&H vulnerabilities

Conditions or weaknesses at facilities that could lead to unnecessary or increased exposure of workers or the public to radiation or to HEU associated chemical hazards, or to the release of radioactive materials to the environment.

extended storage

Storage beyond the termination of processing operations.

facility

Buildings or functional areas covered within a safety analysis report or Basis for Interim Operation.

facility condition vulnerabilities

Weaknesses of those physical barriers—e.g., equipment, buildings, safety systems—necessary to prevent the release of HEU materials from a facility.

hazardous material

Material that is a physical or health hazard.

HEU holdings

Highly enriched uranium and uranium 233 materials, including the types inventoried on the accountability books.

highly enriched uranium (HEU)

Uranium in which the content of uranium 235 isotope is at least 20 percent.

holdup

Highly enriched uranium materials remaining or entrained in process tanks, piping, drains, ventilation ducts, or other locations. Such materials may or may not be fully characterized or quantified.

Home Team

The Working Group Assessment Team responsible for reviewing the self-assessment completed by Site Assessment Teams for sites where no site visits were initially planned by the Working Group.

institutional vulnerabilities

Weaknesses in management systems or administrative controls that are underlying causes of, or contributors to, facility condition and material/packaging vulnerabilities.

isotopes

Species of atoms of a chemical element that have the same atomic number but different mass numbers. For this study, uranium isotopes include uranium 232, uranium 233, uranium 234, uranium 235, and uranium 238.

legacy contamination/hazards

Contamination, facility conditions, or the hazard potential that exists as a result of many years of plant or facility operations.

likelihood

The probability that a vulnerability would lead to an event. Three classifications are used: "high likelihood" for an event that occurs within 0 to 5 years; "low likelihood" for an event that occurs within 5 to 50 years; and "very low likelihood" for an event ordinarily not likely to occur within the life span of the facility, assumed to be more than 50 years.

low enriched uranium (LEU)

Uranium in which the content of uranium 235 isotope is greater than 0.71 percent but less than 20 percent.

material/packaging vulnerabilities

The susceptibility of HEU materials and packaging to degradation from design deficiencies, corrosion, radiolytic damage, aging, or changes in uranium form.

millirem

One-thousandth of a rem.

nondestructive assay (NDA)

Analysis of a material without destroying it, usually accomplished by ultrasonics, X-rays, or some other nondestructive or nonintrusive method.

nuclear criticality

A nuclear chain reaction in a sufficient quantity of fissile or fissionable material, resulting in the rapid generation of heat, radiation, and fission products. Nuclear criticality is assumed to result in high radiological exposures of workers.

oxidation

The conversion of material from one chemical form to another through reaction with oxygen. Uranium metal reacts with oxygen to become uranium oxide.

partitioned areas

Areas within a facility with similar activities, as defined for evaluation purposes. Examples are vaults, chemical process areas, and the fabrication and assembly area.

project support group

A subgroup of the Working Group that directed the assessment on behalf of the Working Group under the guidance of senior management of DOE's Office of Environment, Safety and Health.

public

Members of the public in the environs outside of the site boundary.

pyrophoric

Capable of igniting spontaneously in air at or below 180°F (64.4°C) .

question set

A series of questions that enabled each DOE site to report information on HEU facilities and holdings in a uniform manner. Data provided in response to the question set were entered into an overall database.

rad

A unit of absorbed dose of ionizing radiation equal to an energy of 100 ergs per gram of irradiated material.

radiation

Particles or electromagnetic waves emitted by the atoms and molecules of a radioactive substance as a result of nuclear decay and nuclear reactions, including nuclear fission.

rem

Abbreviation for *roentgen equivalent man,* which is the unit of biological radiation dosage. It is equal to the product of the absorbed dose, in rads, and a quality factor that accounts for the variation in biological effectiveness of different types of radiation.

respirable particles

Particles up to 10 microns in diameter and thus capable of being inhaled.

safe storage

Storage of HEU in high-integrity containers in a facility that is well controlled and routinely monitored. The term also refers to a facility that is designed to withstand anticipated natural phenomena events and is properly protected from fires and other anticipated events that could compromise the facility barriers to HEU release.

Site Assessment Team (SAT)

A team made up of DOE Operations Office and site contractor personnel who are knowledgeable of HEU operations and who generate site data and conduct site self-assessments.

source term

The amount of airborne radioactive material released to the environment within or outside the facility.

special nuclear material (SNM)

Plutonium, uranium 233, or uranium enriched in its isotope U-233 or U-235.

stoichiometric correction factor

A factor used for determining the amount of chemical reaction product present per unit amount of uranium in the material at risk.

stakeholder

Any organization or individual other than DOE and its contractors that has an interest in the management and operation of DOE sites.

toxic materials

Materials that may present an undesirable risk to the health of living organisms.

transuranic materials

Elements having atomic numbers greater than that of uranium (i.e., 92).

waste

Material in any form designated by accountability records as being officially removed from the site or declared by the site to be waste. The term encompasses waste materials collocated with HEU and thus capable of impacting HEU vulnerability.

workers

Employees assigned to work involving HEU processing, handling, or storage within a facility.

Working Group

The body of DOE staff, site contractors, consultants, and stakeholders that planned and directed the HEU assessment.

Working Group Assessment Team (WGAT)

A team made up of DOE staff, site contractor personnel (not from the site being assessed), and consultants that conducted independent verification and validation of a site assessment on behalf of the Working Group.